

|                         |   |
|-------------------------|---|
| 1. Record Nr.           | UNINA9910799251403321   |
| Titolo                  | Rough Sets : International Joint Conference, IJCRS 2023, Krakow, Poland, October 5-8, 2023, Proceedings // Andrea Campagner [and five others], editors  |
| Pubbl/distr/stampa      | Cham, Switzerland : , : Springer, , [2023]<br>©2023   |
| ISBN                    | 3-031-50959-5   |
| Edizione                | [First edition.]  |
| Descrizione fisica      | 1 online resource (686 pages)   |
| Collana                 | Lecture Notes in Computer Science Series ; ; Volume 14481   |
| Disciplina              | 511.32  |
| Soggetti                | Rough sets  |
| Lingua di pubblicazione | Inglese   |
| Formato                 | Materiale a stampa  |
| Livello bibliografico   | Monografia  |
| Nota di bibliografia    | Includes bibliographical references and index.  |
| Nota di contenuto       | Intro -- Preface -- Organization -- Anniversary Talk -- Rough Sets in Interactive Granular Computing: Toward Foundations for Intelligent Systems Interacting with Human Experts and Complex Phenomena -- Keynote Lectures -- Rough-Calculus and Numerical Analysis - A Mathematical Foundation -- Can AI and Big Data Methods Really Help in Cyber Security? -- Applications of Tolerance-based Granular Methods (Extended Abstract) -- Role of Color in Histological Image Analysis: Rough-Fuzzy Computing to Deep Learning -- Big Data Intelligence: Challenges and Our Solutions -- Knowledge Engineering in Food Computing \mdash Selected Problems and Applications (Extended Abstract) -- Model-agnostic Explanations of Black-box Prediction Models using Rough Sets - The Case of Post-Competition Analytics at KnowledgePit.ai (Keynote Abstract) -- Contents -- Rough Set Models -- Selected Approaches to Conflict Analysis Inspired by the Pawlak Model - Case Study -- 1 Introduction -- 2 Literature Review -- 3 Conflict Analysis Models - Case Study -- 3.1 Conflict Analysis Using the Pawlak Model and the Distance Function -- 3.2 Conflict Analysis Using the Pawlak Model and the Conflict Function -- 3.3 Conflict Analysis Using Hierarchical Clustering for Determining Disjoint Clusters -- 3.4 Conflict Analysis Using Negotiations Stage -- 3.5 Consensus Model -- 4 Comparison and Application Areas -- 5 Conclusions -- References -- Multi-heuristic Induction of Decision Rules -- 1 |

Introduction -- 2 Decision Rules -- 2.1 Heuristics for Induction of Decision Rules -- 2.2 Decision Rules Derived from Decision Trees -- 3 Global Optimization -- 4 Experimental Results -- 5 Conclusions -- References -- Algebraic Formulations and Geometric Interpretations of Decision-Theoretic Rough Sets -- 1 Introduction -- 2 Algebraic Formulations -- 2.1 Bayesian Decision Procedure -- 2.2 Two-Way Classification. 2.3 Three-Way Classification -- 3 Geometric Interpretations -- 3.1 Geometric Interpretation of the Bayesian Classification -- 3.2 Geometric Interpretation of Two-Way Classification -- 3.3 Geometric Interpretation of Three-Way Classification -- 4 Conclusions -- References -- Reduction of Binary Attributes: Rough Set Theory Versus Formal Concept Analysis -- 1 Introduction -- 2 Rudiments of Rough Sets and Formal Concept Analysis -- 2.1 Elements of Rough Set Theory -- 2.2 Elements of Formal Concept Analysis -- 3 Set Spaces - A Platform for Comparison of RST and FCA -- 4 Reduction of Binary Attributes in RST and Reduction of Attributes in FCA - A Comparison -- 5 Conclusions -- References -- An Acceleration Method for Attribute Reduction Based on Attribute Synthesis -- 1 Introduction -- 2 Preliminaries -- 2.1 Neighborhood Rough Set -- 2.2 Attribute Reduction -- 3 Reduction Based on Attribute Synthesis -- 4 Experimental Analysis -- 4.1 Time Consumption Comparison -- 4.2 Classification Accuracy Comparison -- 5 Conclusions and Future Perspectives -- References -- Attribute Reduction Based on the Multi-annulus Model -- 1 Introduction -- 2 Construction of Multi-annulus Model -- 3 Attribute Reduction Based on the Multi-annulus Model -- 4 Experiments -- 4.1 Datasets -- 4.2 Time Consumption Comparison -- 4.3 Classification Accuracy -- 4.4 Parameter Sensitivity -- 4.5 Conclusion -- References -- Foundations -- Deterministic and Nondeterministic Decision Trees for Decision Tables with Many-Valued Decisions from Closed Classes -- 1 Introduction -- 2 Main Definitions and Notation -- 2.1 Decision Tables -- 2.2 Deterministic and Nondeterministic Decision Trees -- 2.3 Complexity Measures -- 2.4 Parameters of Decision Trees and Tables -- 3 Main Results -- 3.1 Function  $F, A$  -- 3.2 Function  $G, A$  -- 3.3 Function  $H, A$  -- 3.4 Family of Closed Classes of Decision Tables. 3.5 Example of Information System -- 4 Conclusions -- References -- Paraconsistent Logics: A Survey Focussing on the Rough Set Approach -- 1 Introduction -- 2 Different Approaches to Paraconsistency -- 2.1 The 3-Valued Approach -- 2.2 Non-adjunctive Approach -- 2.3 Non-truth Functional Approach -- 2.4 Transformation Approach -- 2.5 Logics of Formal Inconsistency -- 2.6 Adaptive Approach -- 2.7 Relevance Approach -- 2.8 Rough Set Approach -- 3 Some New Paraconsistent Logics -- 3.1 The Systems  $Lr_5$  -- 3.2 Paraconsistency of  $Lr_5$  -- 4 Conclusions -- References -- Hexagons of Opposition in Linguistic Three-Way Decisions -- 1 Introduction -- 2 Preliminaries -- 2.1 Three-Way Decisions with Evaluative Linguistic Expressions -- 2.2 Hexagons of Opposition -- 3 Hexagons of Opposition in Linguistic Three-Way Decisions -- 3.1 Hexagons of Opposition with Evaluative Linguistic Expressions -- 3.2 Comparing Hexagon of Oppositions -- 3.3 Discussion on the Logical Relations Between Hexagons -- 4 Conclusions -- References -- Algebraic Models for Qualified Aggregation in General Rough Sets, and Reasoning Bias Discovery -- 1 Introduction -- 2 Background -- 2.1 T-Norms, S-Norms, Uninorms, and Implications -- 2.2 Implication Operations -- 3 Model of Rough Skeptic and Pessimistic Reasoning -- 3.1 Implications -- 3.2 Concrete and Abstract Algebraic Models -- 4 Illustrative Examples -- 4.1 Abstract Example -- 4.2 Detection of Reasoning and Algorithm Bias --

5 Skeptical Aggregation and Rough Dependence -- 6 Directions --  
References -- Two-Sorted Modal Logic for Formal and Rough Concepts  
-- 1 Introduction -- 1.1 Many-Sorted Polyadic Modal Logic -- 2 Two-  
Sorted Modal Logic and Concept Lattices -- 2.1 Two-Sorted Modal  
Logic and Concept Lattices in Rough Set Theory -- 2.2 Two Sorted  
Modal Logic and Concept Lattice in Formal Concept Analysis.  
3 Logical Representation of Three Concept Lattices -- 4 Conclusion and  
Future Direction -- References -- Kryszkiewicz's Relation for  
Indiscernibility of Objects in Data Tables Containing Missing Values --  
1 Introduction -- 2 Pawlak's Approach -- 3 Lipski's Approach -- 3.1  
Possible Tables and Possible Indiscernibility Relations -- 3.2 Possible  
Equivalence Classes -- 3.3 Aggregation of Possible Indiscernibility  
Relations -- 3.4 Lower and Upper Bounds of the Actual Approximations  
-- 4 Kryszkiewicz's Relation for Indiscernibility of Objects -- 5  
Relationship Between Kryszkiewicz's Approach and Lipski's Approach  
-- 6 Conclusions -- References -- Algebraic, Topological, and  
Mereological Foundations of Existential Granules -- 1 Introduction -- 2  
Background -- 2.1 Topological Vector Spaces -- 2.2 Partial Algebraic  
Systems -- 3 Existential Granular K-Means Algorithm -- 3.1 Partial  
Algebras for BKM Variants -- 4 The Granular Ball Methodologies -- 4.1  
Fixing the Mathematics -- 5 Existential Granulations -- 5.1 Clean  
Rough Randomness and Models of Algorithms -- 5.2 Formalizing the  
BKM Algorithms -- 6 Further Directions -- References -- Aggregation  
Operators on Shadowed Sets Deriving from Conditional Events and  
Consensus Operators -- 1 Introduction -- 2 Preliminaries -- 2.1  
Shadowed Sets -- 2.2 Aggregation Functions -- 3 How to Aggregate  
Shadowed Sets -- 3.1 Using Operations on Conditional Events -- 3.2  
Using Orthopair-Like Operations -- 4 Aggregation Functions  
Generating Operations on Shadowed Sets -- 4.1 Aggregation Functions  
Generating Conditional-Event Conjunctions on Shadowed Sets -- 4.2  
Aggregation Functions Generating Conditional-Event Disjunctions on  
Shadowed Sets -- 4.3 Aggregation Functions Generating \*C -- 5  
Conclusions and Future Works -- References -- Pawlak, Belnap and the  
Magical Number Seven -- 1 Introduction.  
2 The Pawlak-Brouwer-Zadeh Distributive de Morgan Lattices and  
Indiscernibility-Based Rough Set Theory -- 2.1 Pawlak-Brouwer-Zadeh  
Lattices and Rough Set Theory -- 3 The Seven-Valued Logic of the  
Pawlak-Brouwer-Zadeh Lattice -- 4 Conclusions -- References --  
Three-way Decisions -- Three-Way Conflict Analysis for Three-Valued  
Situation Tables with Rankings and Reference Tuples -- 1 Introduction  
-- 2 Preliminaries -- 3 Three-Way Conflict Analysis Models by  
Considering Rankings and Reference Tuples -- 3.1 Two Rankings of  
Issue Sets and Two Reference Tuples -- 3.2 Alliance and Conflict  
Measures with Weight Factors -- 4 An Example -- 5 Conclusion and  
Future Work -- References -- Three-Way Social Network Analysis:  
Triadic Measures at Three Levels -- 1 Introduction -- 2 A Tri-Level  
Framework of Triadic Measures -- 2.1 Triadic Measures of Centrality at  
the Node-Level -- 2.2 Triadic Measures of Importance at the  
Community-Level -- 2.3 Triadic Measures of Community-Importance  
at the Network-Level -- 3 Two Examples -- 4 Conclusion --  
References -- Cognitive and Social Decision Making: Three-Way  
Decision Perspectives -- 1 Introduction -- 2 Three-Way Decision, Tri-  
Level Thinking, and SMV Spaces -- 2.1 An Overview of Three-Way  
Decision -- 2.2 Tri-Level Thinking and SMV Spaces -- 3 Three  
Perspectives on Cognitive and Social Decision Making -- 3.1 Research  
Framework Perspective -- 3.2 Social Hierarchy Perspective -- 3.3  
Intelligence and Intelligent Systems Perspective -- 4 Concluding  
Remarks and Future Research Challenges -- References -- New Models

of Three-Way Conflict Analysis for Incomplete Situation Tables -- 1  
Introduction -- 2 Preliminaries -- 3 Three-Way Conflict Analysis  
Models for Incomplete Information Situation Tables -- 4 An Application  
of the Three-Way Conflict Analysis Model -- 5 Conclusion --  
References -- Granular-Ball Three-Way Decision.  
1 Introduction.

---